FAQ

Q1. Explain the hedging of exchange risk.

A1. Forward rates can be very useful as a tool for hedging exchange risk. The caveat is that a forward contract is highly inflexible, because it is a binding contract that the buyer and seller are obligated to execute at the agreed-upon rate. Understanding exchange risk is an increasingly worthwhile exercise in a world where the best investment opportunities may lie overseas. For this purpose now we will take an example with our home currency for a better explanation and understanding of the overall concept. Consider an Indian investor who had the foresight to invest in the Canadian equity market at the beginning of 2012. Total returns from Canada's benchmark S&P/TSX equity index from 2012 to August 2016 were let say 106%, or about 11.5% annually. Compare that performance with that of the S&P 500, which has provided returns of only let us assume 26% over that period, or 3.5% annually. Here's the kicker. Because currency moves can magnify investment returns, an Indian investor invested in the S&P/TSX at the start of 2012 would have had total returns (in terms of INR) of 208% by August 2016, or 18.4% annually. The Canadian dollar's appreciation against the Indian Rupee over that time frame turned healthy returns into spectacular ones. However, it is an altogether different story for Canadian investors invested in the Indian equity market. In this case, the 26% returns provided by the S&P 500 from 2012 to August 2016 would have turned to negative 16%, due to the Indian Rupee's depreciation against the Canadian dollar. Hedging exchange risk (again, with the benefit of hindsight) in this case would have mitigated at least part of that dismal performance.

Q2. Explain the Interest Rate Parity Relationship Between the U.S. and Canada.

A2. Let us examine the historical relationship between interest rates and exchange rates for the U.S. and Canada, the world's largest trading partners. The Canadian dollar has been exceptionally volatile since the year 2000. After reaching a record low of US61.79 cents in January 2002, it rebounded close to 80% in the following years, reaching a modern-day high of more than US$1.10 in November 2007.Looking at long-term cycles, the Canadian

dollar depreciated against the U.S. dollar from 1980 to 1985. It appreciated against the U.S. dollar from 1986 to 1991 and commenced a lengthy slide in 1992, culminating in its January 2002 record low. From that low, it then appreciated steadily against the U.S. dollar for the next five and a half years. For the sake of simplicity, we use prime rates (the rates charged by commercial banks to their best customers) to test the UIP condition between the U.S. dollar and Canadian dollar from 1988 to 2008.Based on prime rates, UIP held during some points of this period, but did not hold at others, as shown in the following examples: •The Canadian prime rate was higher than the U.S. prime rate from September 1988 to March 1993. During most of this period, the Canadian dollar appreciated against its U.S. counterpart, which is contrary to the UIP relationship. •The Canadian prime rate was lower than the U.S. prime rate for most of the time from mid-1995 to the beginning of 2002. As a result, the Canadian dollar traded at a forward premium to the U.S. dollar for much of this period. However, the Canadian dollar depreciated 15% against the U.S. dollar, implying that UIP did not hold during this period as well. •The UIP condition held for most of the period from 2002, when the Canadian dollar commenced its commodity-fueled rally, until late 2007, when it reached its peak. The Canadian prime rate was generally below the U.S. prime rate for much of this period, except for an 18-month span from October 2002 to March 2004.

Q3. Explain Interest Rate Parity

A3. Interest rate parity refers to the fundamental equation that governs the relationship between interest rates and currency exchange rates. The basic premise of interest rate parity is that hedged returns from investing in different currencies should be the same, regardless of the level of their interest rates.

Q4. Explain with an example the diagrammatic representation of interest rate parity with its explanation

A4. ExampleLet us consider investing € 1000 for 1 year. As shown in the figure below, we'll have two options as investment cases – Case I: Home InvestmentIn the US, let the spot exchange rate be $1.2245 / €1.So, practically, we get an exchange for our €1000 @ $1.2245 = $1224.50We can invest this money $1224.50 at the rate of 3% for 1 year which yields $1261.79 at the end of the year.Case II: International InvestmentWe can also

invest €1000 in an international market, where the rate of interest is 5.0% for 1 year.So, €1000 @ of 5% for 1 year = €1051.27Let the forward exchange rate be $1.20025 / €1.So, we buy forward 1 year in the future exchange rate at $1.20025/€1 since we need to convert our €1000 back to the domestic currency, i.e., the U.S. Dollar.Then, we can convert € 1051.27 @ $1.20025 = $1261.79Thus, when there is no arbitrage, the Return on Investment (ROI) is equal in both cases, regardless the choice of investment method.Arbitrage is the activity of purchasing shares or currency in one financial market and selling it at a premium (profit) in another.

Q5. Which are the two versions of Interest rate parity?

A5. There are two versions of interest rate parity:

1. Covered Interest Rate Parity

2. Uncovered Interest Rate Parity

Q6. Explain how to Calculate Forward Rates

A6. Forward exchange rates for currencies refers to exchange rates at a future point in time, as opposed to spot exchange rates, which refers to current rates. An understanding of forward rates is fundamental to interest rate parity, especially as it pertains to arbitrage. The basic equation for calculating forward rates with the U.S. dollar as the base currency is: Forward Rate = Spot Rate X (1 + Interest Rate of Overseas country) -------- (1 + Interest Rate of Domestic country)Forward rates are available from banks and currency dealers for periods ranging from less than a week to as far out as five years and beyond. As with spot currency quotations, forwards are quoted with a bid-ask spread. Consider U.S. and Canadian rates as an illustration. Here we are taking currency of two different nations for convenience purpose as American dollar and Canadian Dollar are easily comparable. Suppose that the spot rate for the Canadian dollar is presently 1 USD = 1.0650 CAD (ignoring bid-ask spreads for the moment). One-year interest rates (priced off the zero-coupon yield curve) are at 3.15% for the U.S. dollar and 3.64% for the Canadian dollar. Using the above formula, the one-year forward rate is computed as follows:1 USD = 1.0650 X (1 + 3.64%) = 1.0700 CAD ---------- (1 + 3.15%)The difference between the forward rate and spot rate is known as swap points. In the above example, the swap points amount to 50. If this difference (forward rate – spot rate) is positive, it

is known as a forward premium; a negative difference is termed a forward discount. A currency with lower interest rates will trade at a forward premium in relation to a currency with a higher interest rate. In the example shown above, the U.S. dollar trades at a forward premium against the Canadian dollar; conversely, the Canadian dollar trades at a forward discount versus the U.S. dollar. Can forward rates be used to predict future spot rates or interest rates? On both counts, the answer is no. A number of studies have confirmed that forward rates are notoriously poor predictors of future spot rates. Given that forward rates are merely exchange rates adjusted for interest rate differentials, they also have little predictive power in terms of forecasting future interest rates

Q7. Explain Covered Interest Rate Parity

A7. According to covered interest rate parity, forward exchange rates should incorporate the difference in interest rates between two countries; otherwise, an arbitrage opportunity would exist. In other words, there is no interest rate advantage if an investor borrows in a low-interest rate currency to invest in a currency offering a higher interest rate.

Typically, the investor would take the following steps:

1. Borrow an amount in a currency with a lower interest rate.

2. Convert the borrowed amount into a currency with a higher interest rate.

3. Invest the proceeds in an interest-bearing instrument in this (higher interest rate) currency.

4. Simultaneously hedge exchange risk by buying a forward contract to convert the investment proceeds into the first (lower interest rate) currency. The returns in this case would be the same as those obtained from investing in interest-bearing instruments in the lower interest rate currency. Under the covered interest rate parity condition, the cost of hedging exchange risk negates the higher returns that would accrue from investing in a currency that offers a higher interest rate.

Q8. Explain Covered Interest Rate Arbitrage

A8. Consider the following example to illustrate covered interest rate parity. Assume that the interest rate for borrowing funds for a one-year period in Country A is 3% per annum, and that the one-year deposit rate in Country B

is 5%. Further, assume that the currencies of the two countries are trading at par in the spot market (i.e., Currency A = Currency B). An investor: •Borrows in Currency A at 3%. •Converts the borrowed amount into Currency B at the spot rate. •Invests these proceeds in a deposit denominated in Currency B and paying 5% per annum.The investor can use the one-year forward rate to eliminate the exchange risk implicit in this transaction, which arises because the investor is now holding Currency B, but has to repay the funds borrowed in Currency A. Under covered interest rate parity, the one-year forward rate should be approximately equal to 1.0194 (i.e., Currency A = 1.0194 Currency B), according to the formula discussed above.

Q9. What if the one-year forward rate is also at parity? (i.e., Currency A = Currency B)? Explain the scenario of above question in this case.

A9. In this case, the investor in the above scenario could reap riskless profits of 2%. Here's how it would work. Assume the investor: •Borrows 100,000 of Currency A at 3% for a one-year period.•Immediately converts the borrowed proceeds to Currency B at the spot rate.•Places the entire amount in a one-year deposit at 5%.•Simultaneously enters into a one-year forward contract for the purchase of 103,000 Currency A. After one year, the investor receives 105,000 of Currency B, of which 103,000 is used to purchase Currency A under the forward contract and repay the borrowed amount, leaving the investor to pocket the balance - 2,000 of Currency B. This transaction is known as covered interest rate arbitrage.Market forces ensure that forward exchange rates are based on the interest rate differential between two currencies, otherwise arbitrageurs would step in to take advantage of the opportunity for arbitrage profits. In the above example, the one-year forward rate would therefore necessarily be close to 1.0194.

Q10. Explain Uncovered Interest Rate Parity

A10. Uncovered interest rate parity (UIP) states that the difference in interest rates between two countries equals the expected change in exchange rates between those two countries. Theoretically, if the interest rate differential between two countries is 3%, then the currency of the nation with the higher interest rate would be expected to depreciate 3% against the other currency. In reality, however, it is a different story. Since the introduction of floating exchange rates in the early 1970s, currencies of countries with high interest rates have tended to appreciate, rather than depreciate, as the UIP equation

states. This well-known conundrum, also termed the "forward premium puzzle," has been the subject of several academic research papers. The anomaly may be partly explained by the "carry trade," whereby speculators borrow in low-interest currencies such as the Japanese yen, sell the borrowed amount and invest the proceeds in higher-yielding currencies and instruments. The Japanese yen was a favorite target for this activity until mid-2007, with an estimated $1 trillion tied up in the yen carry trade by that year. Relentless selling of the borrowed currency has the effect of weakening it in the foreign exchange markets. From the beginning of 2005 to mid-2007, the Japanese yen depreciated almost 21% against the U.S. dollar. The Bank of Japan's target rate over that period ranged from 0 to 0.50%; if the UIP theory had held, the yen should have appreciated against the U.S. dollar on the basis of Japan's lower interest rates alone.